PALEONTOLOGY.—*Mylodont (Ground Sloth) dermal ossicles from Colombia, South America.*[1] R. Lee Collins, Johns Hopkins University. (Communicated by E. W. Berry.)

This paper reviews briefly some of the literature on dermal ossicles in the mylodont group of ground-sloths and describes some dermal bones collected by Dr. Maurice Rollot[2] from an old lake deposit in the southern part of the Bogotá Plateau, Colombia, South America. The bones are ascribed provisionally to *Mylodon robustus* Owen var. *tarijensis* Ameghino.

The presence of dermal bones in the mylodont group of ground-sloths has been known for many years. They were recorded as early as 1841 by Lund,[3] but apparently Burmeister[4] was the first to figure them and give a definite description of their appearance and a discussion as to their probable position in the skin of *Mylodon*. Conclusive evidence concerning the nature and position of such dermal armor in one mylodont genus, was furnished by the remarkably well preserved remains of *Glossotherium* (= *Neomylodon* and *Grypotherium*) discovered in a large cave at Consuelo Cove, Ultima Esperanza Inlet in the Magellan Territory of southern Chile. Skeletal material, the horny claws, fragments of the skin, and dung of the animal were collected by Eberhard and others in 1895, Nordenskjöld in 1896 and by Moreno in 1897. The nature and unusual preservation of this material caused much comment and speculation in the scientific world. Illustrations of the material were presented by Lönnberg,[5] Moreno and Woodward[6] and Hauthal, Roth and Lehmann-Nitsche[7] in 1899 and by Woodward[8] in 1900.

[1] Received May 1, 1933.

[2] Letter of September 18, 1932 from Dr. Maurice A. Rollot, Bogotá, Colombia to Prof. E. W. Berry of The Johns Hopkins University. . . . "et j'ai le plaisir de vous remettre aujourd'hui une collection . . . trouvées au contact d'un corps de *Mylodon*, au cours d'exploration y d'excavations, dans la partie sud du Haut Plateau de Bogotá. Le terrain appartient á une de ces anciennes lagunes e'tagées et supérandines, actuellement partiellement déséchées á une altitude de pres de 2.900 mts. . . . des os du *Mylodon*, qui put être identifié seulement á cause des dents, en tout semblable á ceux décrits par Marcelin Boule, dans son ouvrage sur les mammiferes fossiles du Tarija, S. A."

[3] Lund, P. W. K. Dansk. Vidensk. Selsk. Afhandl. **8**: footnote p. 85. 1841.

[4] Burmeister, H. Anales Museo Publico, Buenos Aires. **1**: 173, *pl. 5*, *fig. 8*. 1864–1869.

[5] Lönnberg, E. *On some remains of* Neomylodon listai *Ameghino brought home by the Swedish expedition to Tierra del Fuego 1896*. Wissensch. Ergebn. Schwedish. Exped. Magellansländ, 1895–1897 unter Leitung von Dr. Otto Nordenskjöld. **2**: 149–170, *pls. 12–14*. 1899.

[6] Moreno, F. P. and Woodward, A. S. *On a portion of mammalian skin named* Neomylodon listai, *from a cavern near Consuelo Cove, Last Hope Inlet, Patagonia. With a description of the specimen*. Proc. Zool. Soc. London, pp. 144–156, *pls. 13–15*. 1899.

[7] Hauthal, R., Roth, S. and Lehmann-Nitsche, R. *El mammifero misterioso de la Patagonia*, Grypotherium domesticum. Revista Mus. de La Plata. **9**: 409–474, *pls. 1–5*. 1899.

[8] Woodward, A. S. *On some remains of* Grypotherium (Neomylodon) listai *and*

This brief paper does not warrant further references or more than the following short statement of some of the facts derived from the study of the *Glossotherium* remains. The skin described by Moreno and Woodward in 1899, is covered with hair varying in length from 10 to 65 millimeters and the bones are all confined to the inner portion of the dermis and never extend to the outer part in which the hair is implanted. The ossicles are irregularly arranged and closely spaced. The largest measure 10 by 15 millimeters, but the majority are smaller than this and large and small bones are indiscriminately mixed. They are irregular in form, the inner face is quite generally convex or pyramidal, the outer face slightly convex or more or less flattened, and there is no trace of definite patterns or sculpturing on them. This fragment of skin apparently came from the neck and shoulder region of the animal. A second fragment of skin, 100 by 93 centimeters, or almost twice the size of the preceding, was described by Woodward in 1900. It is supposed to have come from the trunk of the animal and there is a tendency, in what appears to be the middle part of the flank, for the ossicles to be arranged in rows parallel with the ribs. As the ventral border of the flank is approached, the bones dwindle in size or are lacking. The long axis of the elongate elements is nearly always coincident with the direction of the rows. A portion of skin bearing small ossicles was assigned more or less provisionally to the leg of the creature by Lönnberg in 1899.

In an article on the discovery of Quaternary mammals at Rancho La Brea, California, Merriam[9] recorded the occurrence of dermal bones in association with the remains of *Mylodon* and later[10] figured a layer of ossicles that were found more or less in their normal position, in a sheet of asphaltum overlying a mylodont scapula. Further remarks on the Rancho La Brea ossicles were contributed by Sinclair[11] who gave additional figures. The excellent report on the Cenozoic gravigrade edentates of North America by Stock[12] contains a review of the articles published on the dermal bones from the asphalt deposits. These bones are ascribed definitely to *Mylodon harlani* Owen.

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associated mammals from a cavern near Consuelo Cove, Last Hope Inlet, Patagonia. Proc. Zool. Soc. London, pp. 64–78, *pls. 5–9.* 1900.

[9] MERRIAM, J. C. *Recent discoveries of Quaternary mammals in southern California.* Science, n. s. **24**: 248–250. 1906.

[10] MERRIAM, J. C. *Death trap of the ages.* Sunset Magazine. **21**: 465–475. 1908.

[11] SINCLAIR, W. J. *Dermal bones of* Paramylodon *from the asphaltum deposits of Rancho La Brea, near Los Angeles, California.* Proc. Amer. Philos. Soc. **49**: 191–195. 1910.

[12] STOCK, C. *Cenozoic gravigrade edentates of western North America, with special reference to the Pleistocene Megalonychinae and Mylodontidae of Rancho La Brea.* Carnegie Inst. Washington, Pub. No. **331**: 120–121, *pl. 21.* 1925.

The dermal ossicles from Colombia were found, as noted in the excerpt from Mr. Rollot's letter, in association with poorly preserved remains of a *Mylodon*. The teeth found with the skeletal remains appear to be similar to those of *Mylodon robustus* Owen var. *tarijensis* Ameghino, as figured by Boule[13] in an account of the fossil mammals from Tarija, Bolivia. On page 219, Boule mentions dermal bones from this animal, but does not describe or figure them. The Colom-

Fig. 1.—Dermal ossicles of *Mylodon* from Bogotá, Colombia. Natural size. Viewed from the upper surface.

bian material consists of some 250 individual bones, that range in size from 10 by 8 by 7.5 mm. to 28 by 16.5 by 15 mm. The largest and smallest specimens and others of intermediate size are illustrated in the accompanying figure. In preparing the bones for illustration, it was assumed that Woodward's observations on the orientation of the dermal ossicles in the skin of *Glossotherium* were correct and that supposedly the orientation, as suggested by Burmeister and others, was essentially similar in *Mylodon*. Therefore, the more highly pitted and less convex side, the so called, upper surface is represented in the

[13] Boule, M. *Mammiferes fossiles de Tarija*. With collaboration of A. Thevenin. Mission scientifique G. de Crequi-Monfort et E. Senechal de la Grange. H. le Soudier (Paris), 1920.

figure. All of the specimens from Colombia are stained by oxides of iron and manganese on their exterior surfaces and also stained on the interior, but the discoloration here is confined largely to the regions adjacent to the vascular canals. The outer, more dense layer of bone is generally light brown in color, whereas the central, more porous part, is pale yellow or white with an occasional growth of black dendritic wad. In a few of the broken specimens the central bone material has largely disappeared and such individuals present much the appearance of geodes or concretions. There are no surface markings on the exterior other than irregular ridges and grooves and the pits formed by the entrance of the vascular canals.

Most of the Colombian ossicles are larger than those of *Glossotherium* and apparently more irregular in outline and surface markings. Some of them are distinctly elongate and in this characteristic they are somewhat similar to the elongate, oriented elements that Woodward describes from the fragment of skin ascribed to the flank of *Glossotherium*. Several of the smaller specimens approach somewhat the degree of regularity exhibited by the quadrilateral forms from *Mylodon harlani* as figured by Sinclair (Fig. 1, *b*, *c*, *d*) and Stock (Plate 21). The majority compare rather closely in size and irregularity with the more unsymmetrical individuals figured by Stock. They appear to be more like the ossicles described from *Mylodon* and are referred provisionally to *Mylodon robustus* Owen var. *tarijensis* Ameghino.

PALEONTOLOGY.—*A new Pennsylvanian trilobite from Missouri.*[1] JAMES S. WILLIAMS, U. S. Geological Survey. (Communicated by GEORGE H. GIRTY.)

Complete dorsal shields of trilobites are rarely found in Pennsylvanian rocks, and their discovery is therefore always fortunate. If they represent new species, their description often prevents the creation of synonyms based on isolated parts. If they represent species previously known from incomplete specimens, the description may reveal the identity of two species or it may show that isolated pygidia and cephala placed in a single species are not truly conspecific.

The new species here described is based on two cotypes each of which has the cephalon, thorax, and pygidium in articulation. The typical specimens were collected by Mr. W. S. Olson and myself from the lower part of the Cherokee (lower Pennsylvanian) shale near Columbia, Missouri, in 1929, while studying the stratigraphy of the

[1] Published by permission of the Director of the U. S. Geological Survey. Received May 25, 1933.